DOCUMENT RESUME

ED 246 448 CS 208 468

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TITLE Who Are the Media Spokespersons for Science?
PUB DATE Aug 84
NOTE 19p.; Paper presented at the Annual Meeting of the Association for Education in Journalism and Mass Communication (67th, Gainesville, FL, August 5-8, 1984).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Information Sources; *Interpersonal Relationship; Interviews; Mass Media; *Media Research; *News Reporting; Productivity; *Professional Recognition; *Scientific Research; *Scientists
IDENTIFIERS Journalism Research; *Journalists

ABSTRACT

Data collected in a 1981 national survey of physical/biological and social/behavioral scientists were used to investigate three research questions: (1) How often are scientists who encounter journalists called upon to discuss topics tangential or unrelated to their research? (2) Will the amount of contact with journalists be related to the number of years in research, research productivity, or type of field? and (3) Will the amount of contact scientists have with the media be related to their attitudes toward popularization of science news or to the number of media contacts initiated by the scientists themselves? Findings showed that of the 153 scientists who reported interacting with journalists, 39% said that all of their interviews dealt only with their own research, but 61% indicated that at least a portion of their interviews with journalists dealt with topics other than their own research. Scientists called upon to discuss non-research topics are somewhat less productive than scientists who are asked to discuss only their research. As their level of "spokesperson" activity increased, so did their feelings that the scientific community rewarded scientists for engaging in the popularization of science. Furthermore, scientists who served as "spokespersons" with some frequency were more likely to initiate contacts with journalists than scientists who do not serve as spokespersons. Finally, social/behavioral scientists were called upon as spokespersons more often than physical/biological scientists. (HOD)

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Mass Communication & Society
and
Science Writing Educators' Group

ED246448

Who are the Media Spokespersons for Science?

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Presented at the session "New Trends in Science-Mass Communications Research," Mass Communication & Society Division and the Science Writing Educators' Group, at the annual meeting of the Association for Education in Journalism and Mass Communication, Gainesville, Fl, August 1984.

CS 208 468

Who Are the Media Spokespersons for Science?

The scientist-as-source is often viewed as a reluctant participant, as someone who avoids the public spotlight and who dislikes the media. That stereotypical image, however, is untrue for many, if not most, scientists, according to research studies completed over the past decade.

Dunwoody and Scott, for example, report that scientists serve as journalistic sources far more often than previously imagined.[1] And Goodell paints a detailed portrait of the "visible scientist," an individual who welcomes media attention and who serves as a major conduit for scientific information on its way into the public domain.[2]

One bit of folklore that seems to have survived the onslaught of recent studies, however, is the assumption that scientists who do talk to journalists limit their discussions to their own work.

That assumption, which seems parochial and fundamentally harmless, can have an enormous impact on the ways in which the scientist-as-source is perceived by journalists, by media consumers, and by scientists themselves.

For example, an assumption that journalistic interviews involving scientists are limited to discussions of the scientists' research carries with it the corollary assumption that the typical scientist does not serve as a general spokesperson for science, that is, that she or he is rarely called upon to discuss broader scientific issues. And that assumption implies that only a few persons within science are general spokespersons, that such a role is reserved for some kind of "scientific elite" who really know what they're talking about.

Many scientists apparently subscribe to the notion that "spokesperson" status is (or should be) reserved for only a few members of a scientific elite.

As Goodell notes, visible scientists frequently are criticized by colleagues because they speak about topics outside their narrow research areas.[3] And French researchers Boltanski and Maldidier report that many scientists think researchers must "make it" within science before they presume to act as spokespersons.[4] In a survey of European scientists, they found that lower ranking scientists were much less willing to talk to journalists than were higher ranking scientists.[5]

Journalists, too, seem to assume that an elite speaks (or should speak) for science. Shepherd, for example, reports that journalists writing about controversial research into the health aspects of marijuana did not seek out researchers as information sources but relied instead on such scientific "spokespersons" as the heads of federal research agencies.[6]

The assumption that scientists discuss only their own research in journalistic interviews could also have an important impact on the way media consumers perceive the credibility of scientists who appear in the media. Media consumers may assign high levels of credibility to scientist-sources because they think these individuals are speaking as researchers who should know as much about a scientific topic as one can know at a given point.

One study has already provided evidence suggesting that scientists apparently do not limit conversations with media representatives to specific research findings. In their survey of university scientists, Dunwoody and Scott hypothesized that the amount of journalistic contact would be positively related to a scientist's productivity.[7] The more research scientists conducted, in other words, the more journalistic contacts they should have. If journalists utilize scientists primarily for research discussions, then one should find some

kind of relationship between media visibility and productivity. Yet, Dunwoody and Scott found no relationship whatsoever.

Among a number of possible explanations for this absence of a correlation was that "average" scientists were indeed serving as general spokespersons for science--that some media contacts resulted in stories that had nothing to do with the scientists' own research projects, but instead required them to represent the scientific culture in some broader debate.

To investigate this possible explanation, we have turned to data collected in 1981 in a national survey of physical/biological and social/behavioral scientists.

Research Questions and Hypotheses

Three research questions and five hypotheses guided the research reported here:

Question 1: How often are scientists who encounter journalists called upon to discuss topics tangential or unrelated to their research?

Question 2: Will the amount of contact with journalists be related to number of years in research, research productivity or type of field (physical/biological science vs. social/behavioral science)?

Three hypotheses were tested to answer Question 2. We hoped the hypotheses would help us characterize the "spokesperson scientist," if that person indeed existed in these data.

The first hypothesis was based on the work of Boltanski and Maldidier,[8] who found higher ranking European scientists seemed more willing than lower ranking scientists to act as science's spokespersons, and of Goodell,[9] who found that

spokespersons had "made it" in science before venturing into the public domain. Since rank was not measured in the survey, we utilized a measure of the number of years spent as an active researcher as a surrogate and hypothesized:

H1: A positive relationship will be found between the number of years spent as a researcher and the amount of journalistic contact devoted to topics tangential or unrelated to a scientist's research.

Although Dunwoody and Scott found no relationship between productivity and number of media contacts,[10] one might find a relationship between productivity and media contacts dealing with tangential or unrelated issues. Indeed, Goodell reports anecdotal evidence that increased media visibility led to decreased research productivity.[11] On the basis of Goodell's slim evidence, we hypothesized:

H2: A negative relationship will be found between research productivity and amount of journalistic contact devoted to topics tangential or unrelated to a scientist's research.

The third hypothesis used to explore Question 2 is based on the work of Dunwoody, who found that social/behavioral scientists had more encounters with journalists than did other types of scientists.[12] It is also based on an earlier analysis of these survey data in which we found that social/behavioral scientists viewed media contacts more positively than physical/natural scientists did.[13] The hypothesis:

H3: Social/behavioral scientists discuss topics unrelated or tangential to their research more often than physical/biological scientists do.

Question 3 is: Will the amount of contact scientists have with the media be related to their attitudes toward popularization of science news or to the number of media contacts initiated by the scientists themselves?

Our assumption was that scientists who feel positively about discussing broad issues (and not just their own research) and who initiate media contacts will have more contacts with the media than those who don't have positive attitudes or who don't initiate media contacts.

We hypothesized:

H4: The greater the percentage of journalistic contacts devoted to stories unrelated or tangential to a scientist's research, the more positively that scientist will evaluate the role of popularization within the scientific culture.

H5: The greater the percentage of journalistic contacts devoted to stories unrelated or tangential to a scientist's research, the greater the percentage of journalistic contacts that will be initiated by the scientist.

Methods

A sample of 456 scientists was drawn from American Men and Women of Science.[14] Although only about 16% of the more than 150,000 names listed in the work were social scientists, that group was oversampled so that it would constitute about 50% of the sample.

The following sampling procedure was used: Individual pages were selected using a table of random numbers. Then a single number, n, was randomly selected, and the nth person was selected from each page.

The respondents received an initial mailing and one follow-up in spring 1981. A total of 287 respondents returned usable questionnaires, for a response rate of 63%.[15]

The questionnaire was composed of two parts. Respondents were asked in Part 1 to respond to 34 attitudinal statements that dealt with scientists' perceptions

of their own behaviors as sources. Part 2 asked respondents to supply information about such variables as age, education, numbers of recent publications and amount of interaction with journalists during the past year.

Findings

Of the 287 respondents, 187 indicated they had encountered at least one journalist within the past year. And of that 187, 153 provided estimates of the percentage of contact that had been devoted to topics other than their research. So it is with these 153 that this analysis is concerned.

Our first research question is: How often are scientists who encounter journalists called upon to discuss topics tangential or unrelated to their research?

The 153 scientists reported interacting with journalists from one to 100 times during the previous year. Of the 153, 39% (59) said that all of their interviews dealt only with their own research. But 61% (94) indicated that at least a portion of their interviews with journalists dealt with topics other than their own research. In other words, the majority of scientists who had talked to journalists had been asked about topics tangential to their own work.

For these 94 scientists, the percentage of interviews devoted to topics other than their research ranged from 5% to 100%, with 44% of the 94 indicating that all of their encounters during the past year had been devoted to topics tangential or unrelated to their own work.

So scientists in this survey who had encountered journalists were reporting substantial interactions with the press on topics other than their own research. For this group, at least, it was not unusual to be called on by the press to discuss more general aspects of science.

The second research question is: Will the amount of contact with journalists be related to number of years in research, research productivity or type of field in which the scientist works?

The first hypothesis used to answer the question--that number of years spent as a researcher would be positively related to percentage of journalistic contact devoted to nonresearch topics--was an attempt to indirectly test the notion that "established" scientists may be more likely to serve as scientific spokespersons than are scientists who are still trying to make their reputations within the scientific culture. But a Pearson product-moment correlation coefficient of -.19 ($p=.01$) between the two variables meant not only that the hypothesis had to be rejected but that the data indicated the opposite is the case. Scientists with lengthy tenure as researchers were less likely to be involved as scientific "spokespersons" than were scientists with fewer years of research experience.

Hypothesis 2 posited a negative relationship between research productivity and amount of journalistic contact devoted to topics tangential or unrelated to a scientist's research. As Table 1 indicates, this hypothesis was supported. The more frequently a scientist served as a "spokesperson," the less productive that individual proved to be.

TABLE 1 ABOUT HERE

The third hypothesis suggests social/behavioral scientists discuss topics unrelated or tangential to their research more often than physical/biological scientists do. As shown in Table 2, a t-test indicated no statistically

significant differences between the mean percentages of nonresearch contacts of the two groups, so the hypothesis was rejected. However, the mean percentages, did show a difference that matched the direction predicted by the hypothesis. Social scientists reported a greater mean percentage of nonresearch contacts than did physical/biological scientists.

TABLE 2 ABOUT HERE

The third research question--will the amount of contact scientists have with the media be related to the scientists' attitudes toward popularization of science news or to the number of media contacts that they initiate themselves--is answered by testing two hypotheses.

Hypothesis 4 suggests that the greater the percentage of journalistic contacts devoted to stories tangential or unrelated to a scientist's research, the more positively that scientist will evaluate the role of popularization within the scientific culture.

Scientists in this survey had responded to a number of questionnaire items designed to measure their feelings about popularization. Five items dealt directly with the role of popularization within science, and these items are displayed in Table 3. For only one of the five items did Pearson product moment-correlation coefficients indicate a statistically significant relationship; the other four coefficients showed no relationship.

TABLE 3 ABOUT HERE

The one statistically significant correlation was in the predicted direction. Scientists who served frequently as "spokespersons" were more likely to disagree with the statement that "scientists usually are not rewarded within the scientific community for having their work reported in the popular media." But the absence of any correlations between the variables for the four other items leads us to reject our hypothesis.

Finally, in hypothesis 5 we suggest that the greater the percentage of journalistic contacts devoted to stories unrelated or tangential to a scientist's research, the greater the percentage of journalistic contacts that will be initiated by the scientist. And the Pearson product-moment correlation coefficient ($r=.20$, $p=.01$) supports that contention. Scientists generally make little effort to initiate contact with journalists. But this analysis offers some evidence that the extent of "spokesperson" behavior may be related to a scientist's willingness to initiate such contacts.

Conclusions

Scientists obviously do not limit themselves to discussions of their own research in their dealings with journalists, and the job of "representing science" apparently is not reserved only for a scientific "elite." Scientists in this sample were called upon by journalists to discuss topics tangential or unrelated to their own research. More specifically, if a scientist encountered a journalist, the chances were one in three that he or she would be asked to discuss a topic other than his or her own research.

The nature of this sample calls for a caveat at this point, however. Respondents were selected from the reference works American Men and Women of

Science. This means that they had all, in one way or another, distinguished themselves as scientists. So we cannot claim to have examined the encounters of the "average" scientist in the United States. In the end, we suggest caution in generalizing from the behaviors of these individuals to those of the "average" scientist.

But given the frequency of nonresearch journalistic encounters within this sample, we were curious about the nature of those contacts. What kinds of topics were these scientists asked to discuss? The questionnaire had asked scientists to note the topic of one of their nonresearch interactions, and 66 individuals did so. While probably constituting an unrepresentative sample of nonresearch contacts, the 66 topics still provided a pool of "examples," and we offer a bit of detail about the pool here.

We can divide the pool of items into two categories: about 75% of the items were scientific topics that required scientists to generalize from their own research, while the remaining 25% were topics related to the institutions within which the scientists worked. Here are some examples of the former:

*A thermodynamics engineer was interviewed about the possibility that wind energy might one day supply a portion of the nation's energy requirements.

*A psychologist who does research on "environmental contributors to psychopathology" was asked about the reactions of hostages to confinement (a story possibly related to the taking of American hostages in Iran).

*A biologist studying animal behavior was asked about bird migration and the likelihood of spotting specific types of birds in the local area.

*An economist was asked to comment on recent economic forecasts.

The institutional category seems to be the byproduct of administrative responsibilities assumed by a number of scientists in the sample. For example:

*A physician who serves as an agency administrator said he was contacted about the views of the agency, "which has to do with HHS regulation of human subjects in research."

*A sociologist who studies social deviance said: "As a department chairperson, I think I had inquiries about the activities of colleagues or some request for background information to aid in the development of a story."

*A psychologist who studies attitudes said he/she was contacted by journalists concerning "matters relating to changes in university governance."

So while the majority of nonresearch contacts did seem to call upon respondents to generalize from their own research, to act as scientific "spokespersons," a significant proportion of those contacts dealt not with science but with institutional concerns. In these instances, the respondents were acting less as "scientific" spokespersons and more as "institutional" spokespersons.

Our search for ways to characterize the individuals in this sample who were called upon to discuss nonresearch topics revealed only a few relevant variables. The only patterns reflected in our data were that these scientists may be somewhat less productive than scientists who are asked to discuss only their research; that, as their level of "spokesperson" activity increases, so does their feeling that the scientific community rewards scientists for engaging in the popularization of science; and that scientists who serve as "spokespersons" with some frequency are more likely to initiate contacts with journalists than scientists who don't serve as spokespersons.

We also found a tendency in the data (although not a statistically significant one) for social/behavioral scientists to be called upon as spokespersons more often than physical/biological scientists.

So who are the media spokespersons on broad issues in science? Our tentative answer is that many scientists--not just a powerful few--seem to be engaged in that role. Among our sample, more than half of the scientists who had encountered journalists within the past year had been asked questions unrelated or tangential to their own research.

Such a finding does not necessarily negate the conclusions of Boltanski and Maldidier[16] or of Goodell[17] that only those scientists who have succeeded within the scientific culture take on the spokesperson mantle; as we've noted, our sample is derived from a population of scientists who apparently have "made it" in science. But our findings do suggest that scientists may be called upon with some frequency to discuss broader topics within science.

The negative relationship between research productivity and level of spokesperson activity is interesting, although difficult to explain. A correlation provides no information about cause and effect. So we cannot tell from this analysis whether it is the case that less productive scientists have chosen to spend more of their time as "spokespersons" or as administrators and less time as researchers; whether they simply are not productive and never were; or whether they were quite productive at one time but gave up research to do other things.

At the very least, this finding indicates that the criteria scientists use to identify good scientists may not be the criteria journalists use to select scientific sources. But if scientific spokepersons are not the dominant researchers in a given field, who are they? And how does a journalist make a decision about who to call on for information about broader issues?

These questions and the findings of this research are worth pondering. They may help individuals who teach scientists or science students about interacting

with mass media. Many such sessions are geared to preparing the scientist for questions about specific research. It now seems that teachers must also sensitize potential sources to the possibility that they will be asked to serve as spokespersons on broad issues and/or to generalize beyond their data in a given research project.

Journalists also should ponder these results because they indicate that reporters all too often rely on scientific sources who must generalize beyond their own research areas to provide the information requested. One can envision the scenario: A news story with scientific implications comes over the wire, and the city editor of a medium-sized newspaper calls on her reporter to "localize the story," to find a geographically proximate source who can serve as an authority. All too often, that source turns out to be a scientist from the local university, quite competent in her own field but someone who is not doing research in the specific area in question. Yet her general credentials as a "biologist" or an "economist" are enough in the eyes of the reporter and his editor to make her a credible source of information.

But are they enough? Many scientists would argue that the answer is "no," that it is just as dangerous to ask a scientist to generalize beyond his own research as it is to ask a layperson to discuss an issue with which she is not familiar. Journalists might counter that the vagaries of journalistic work make the "ideal"--identifying and contacting a scientist doing front-line research--an implausible goal. But at the very least, this study--as have others in the past--suggests that the credibility of scientific sources is a complex issue that deserves a closer look.

Footnotes

[1]Sharon Dunwoody and Byron T. Scott, "Scientists as Mass Media Sources," Journalism Quarterly 59:52-59, Spring 1982.

[2]Rae Goodell, The Visible Scientists (Boston: Little, Brown, 1977).

[3]Goodell, op. cit.

[4]Luc Boltanski and Pascale Maldidier, "Carriere Scientifique, Moral Scientifique et Vulgarisation," Social Science Information 9:99-118, 1970.

[5]We are not convinced that a study of attitudes of European scientists can be used to predict attitudes of American scientists. Training patterns for scientists differ somewhat across cultures, and at least one cross-cultural study of journalists found a great deal of variation in what is considered normative journalistic behavior across countries (Renate Kocher, "German and British Journalists," paper presented to the 39th annual conference of the American Association for Public Opinion Research and the World Association for Public Opinion Research, Delavan, WI, May 1984). Thus, a pattern of relationships between scientists and journalists within one culture may not hold within another.

[6]R. Gordon Shepherd, "Selectivity of Sources: Reporting the Marijuana Controversy," Journal of Communication 31:129-137, Spring 1981.

[7]Dunwoody and Scott, op. cit.

[8]Boltanski and Maldidier, op. cit.

[9]Goodell, op. cit.

[10]Dunwoody and Scott, op. cit.

[11]Goodell, op. cit.

[12]Sharon Dunwoody, "Mass Media Coverage of the Social Sciences: Some New Answers to Old Questions," paper delivered at the annual meeting of the Association for Education in Journalism and Mass Communication, Corvallis, OR, 1983.

[13]Sharon Dunwoody and Michael Ryan, "Scientific Barriers to the Popularization of Science via Mass Media," Journal of Communication, in press.

[14]Jacques Cattell Press, American Men and Women of Science, Social and Behavioral Sciences, 13th ed. (New York: R.R. Bowker Company, 1978), and Jacques Cattell Press, American Men and Women of Science, Physical and Biological Sciences (New York: R.R. Bowker Company, 1979).

[15]The final 287 respondents included 29 scientists who were involved in a pretest of the questionnaire. Since the pretest population had been randomly selected from the reference works and since pretesting resulted in no changes in the questionnaire, these individuals were included in the larger sample.

[16]Boltanski and Maldidier, op. cit.

[17]Goodell, op. cit.

Table 1

Relationship[1] Between Percentage of Nonresearch Contacts and Different Measures of Productivity

Productivity measures	Correlation	n	p
Number of papers presented in past five years	-.18	152	.02
Number of refereed articles published in past five years	-.20	152	.01
Number of books authored in past 10 years	-.16	151	.03

[1]Pearson product-moment correlation coefficients were used.

Table 2

Differences in "Spokesperson" Activity Based on Type of Scientist

Type of scientist	Mean %tage of nonresearch encounters	T value	p
Social (n=88)	46.1	1.07	n.s.
Physical/biological (n=65)	38.7		

Table 3

Relationship Between Percentage of Nonresearch Contacts and Attitudes Toward Popularization[1]

Statement	correlation[2]	n	p
When stories about scientists' work appear in the popular media, other scientists are likely to regard the articles as "unseemly" advertisements for research efforts	.07	145	n.s.
Scientists usually are not rewarded within the scientific community for having their work reported in the popular media.	-.20	145	.01
Popularization of research through the media is a process that is outside the scientific community and thus has no effect on scientists' chances for advancement in their fields.	-.07	143	n.s.
Scientists who allow their work to be publicized in the popular media are more likely to be criticized than praised by fellow scientists.	.08	137	n.s.
Scientists can gain respect among their colleagues through publication in the popular media.	.01	141	n.s.

[1]The stronger the agreement with an item, the higher the score.

[2]Pearson product moment correlation coefficients were used.